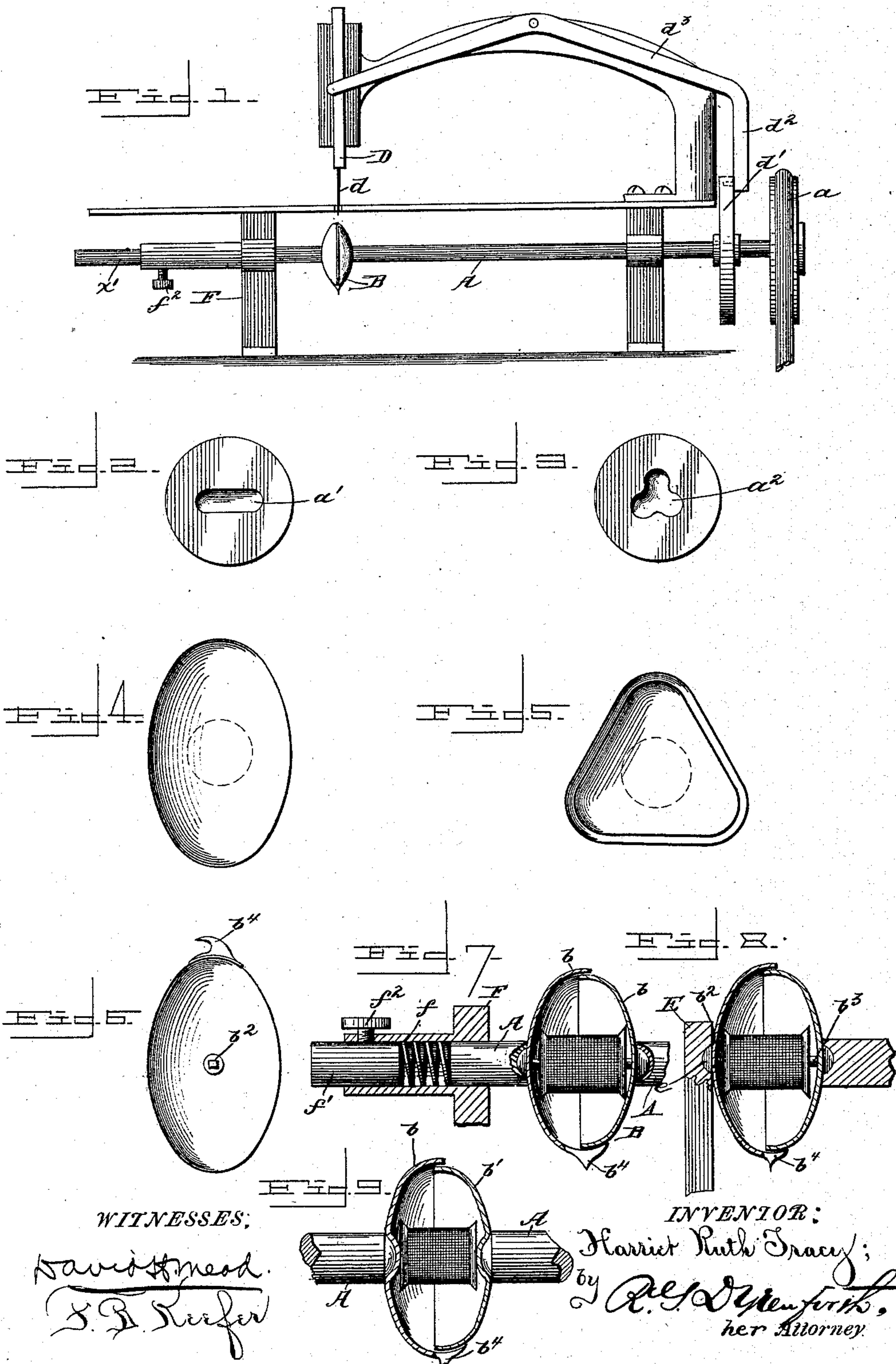


(No Model.)

H. R. TRACY.
SEWING MACHINE.

No. 413,212.

Patented Oct. 22, 1889.



WITNESSES:

David Streed.
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UNITED STATES PATENT OFFICE.

HARRIET R. TRACY, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 413,212, dated October 22, 1889.

Application filed March 26, 1889. Serial No. 304,880½. (No model.)

To all whom it may concern:

Be it known that I, HARRIET RUTH TRACY, of New York, in the county and State of New York, have invented certain new and useful
5 Improvements in Sewing-Machines; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to sewing-machines.

The object of the invention is to produce a simple, compact, and efficient sewing-machine with comparatively few parts, in which both threads may be used directly from the
15 spool or from a ball or cop, thus obviating the necessity of rewinding upon a bobbin, as is ordinarily requisite, and presenting a large supply of thread, in which machine the needle-thread may at all times pass immediately
20 through, by, or beyond the shaft, with formation of a comparatively small loop, and engage the lower thread with readiness and facility.

With this object in view the invention consists in the combination, with a revoluble carrier or shuttle designed to receive a spool, ball, or cop of thread, and having a projection or a depression provided at each side, (or
25 a projection on one side and depression at the other,) of a shaft having a depression or a projection at one end, or, where the shaft is in two parts, depressions or projections immediately at the adjacent ends, the projection or depression on the shuttle and the depression or projection on the shaft, or the projections or depressions on the shuttle and the depressions or projections on the shaft, being
30 of a form (as by being of any regular shape other than circular or by being of irregular shape) suitable to be borne against by the corresponding part on the shaft to revolve it, while still fitting loosely therein or thereon and permitting the passage of thread between the shuttle and the shaft.

45 In the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts, Figure 1 is a view in side elevation of a sewing-machine embodying my invention, showing a power-shaft in two parts with the shuttle interposed. Figs. 2 and 3 are detail
50 views showing suitable depressions in the end

or ends of the shaft for the purpose of engaging corresponding projections on the side or end of the shuttle. Figs. 4 and 5 are detail
55 views showing enlargements provided upon or applied to the end or ends of a shaft, these enlargements having depressions of a suitable form to engage correspondingly-formed shuttles and to impart motion to them while being
60 held loosely in the enlargements. Fig. 6 is a view in side elevation showing the interior of one form of shuttle and displaying an externally-rounded sleeve projecting from one shell and having a squared opening for the
65 square end of the spool-shaft projecting from the complementary shell. Fig. 7 is a sectional view showing an embodiment of my invention wherein the shaft is divided. The adjacent ends are provided with indentations. The
70 shuttle is provided with projections received by the indentations. The shuttle is sustained in operative position by the preferable means of yielding pressure. One shell overlaps the
75 other, leaving a circumferential slit, and the peculiar beak appears. Fig. 8 is a detail view showing a modified form of device for retaining the shuttle in position, in which the power-shaft itself is not in two parts, but the shuttle
80 is held between the end of the power-shaft and a post, upright, standard, or leg, a projection on one side or end of the shuttle fitting into a corresponding depression in the post. Fig. 9 is a view in side elevation showing the shuttle provided with indentations and the
85 shaft with projections fitting these to turn the shuttle.

The point of the invention is to produce a sewing-machine in which a revoluble carrier for containing the shuttle-thread and provided with any suitable opening from which
90 it can be served may be held in the line of the driving-shaft in such manner that while it will receive continuous motion from the same there will still be a passage between it
95 and the shaft for the needle-thread. The organization shown in the drawings will carry this out.

A represents a power-shaft mounted in suitable bearings and provided with a driving-
100 wheel *a*, to which motion is to be imparted from any suitable source.

B represents a case or shuttle consisting of the two hemispheres, hemispheroids, rounded

parts or shells b and b' , placed together, leaving a rim-space between the two, the space presenting the appearance of a marginal circumferential slit, and serving to permit draft of thread from within the case while this is revolving. One shell may overlap the other, the overlap then serving as a guard against the needle-thread entering the case; but I am not confined to this, as a peculiarly-shaped hook or beak, described farther on, will answer the purpose. The shells may be connected in any suitable way that will insure their rotation together and at the same time allow of their ready separation. One way is to attach to the inside of one of the shells a hollow rod or bar—that is, a sleeve b^2 —there being a solid rod or bar b^3 from the other, which will enter the opening, but not turn therein—say a square rod or bar. To keep the parts firmly together, there may be a notch in the sleeve and a catch on the rod, or vice versa.

This device serves the dual purpose of connecting the parts of the case or shuttle and of furnishing a small shaft or arbor to receive a spool or ball from which the lower thread of the machine is to be taken.

On the outside of the portion b of the case is a thread-engaging device—such as a hook-shaped projection or beak b^4 —designed to engage a loop of the needle-thread, separate it and carry it around the case, to engage the shuttle-thread when drawn up, thus making the case a shuttle. The hook or beak is constructed with a lateral projection serving as a shed to prevent the needle-thread from entering the shuttle. It may be employed, where one shell does not overlap the other, as a guard against itself, the needle-thread entering the circumferential slit, or on an overlapping shell as adjunctive to the function of this.

The shuttle is arranged contiguous to, preferably below, the needle of the machine, and is held in a manner to receive continuous motion, while at the same time a passage for the needle-thread is afforded between it and its supports. To provide a connection of this kind, the end or ends of the shaft adjacent to the shuttle will be hollowed or be projecting, or one end will be hollowed and the other projecting, and the hollow or the projection will be in any but circular form—that is, of oblong or polygonal form at the part where motion is to be imparted, the hollow or projection at the shaft end or ends receiving a suitably-shaped portion of the shell or shuttle of relative size and shape to fit loosely the hollow or the projection, the relative parts being of rounded or smooth surface to offer no obstruction to the passage of thread between them.

If desired, the end of the shaft may have an enlarged portion, either affixed to or made with it, this enlarged portion then having the same contour as that described for the end of the shaft, where the end of the shaft

is used directly to engage the shuttle—that is, being either rounded-oblong or rounded-polygonal in form. Thus the bowl of a spoon affixed to the engaging end of a shaft would answer, the side of the shuttle being made to fit it, or complementary thereto. In this case the shuttle need not have projection or indentation; but, being itself made to fit the enlargement or enlargements on the shaft, it will be turned by its body from the enlargement or enlargements.

As in the case of projection from or indentation in the shuttle, and corresponding indentation in or projection at a shaft end, any relative shape as regards shuttle and shaft enlargement will answer, only so that the shuttle fit loosely and yet turn with the shaft, and so that the relative surfaces of the parts be of contour to let the thread slip through. Suitable forms are shown at a' and a^2 .

When the shaft is in two parts, the entire shaft may revolve, or only the driving-wheel part thereof, turning the shuttle by the means described, the other parts being stationary, and the shuttle being supported and turning therein in a common bearing.

I do not wish to limit myself to the forms of indentations herein shown; neither do I wish to be limited as to the use of a divided shaft, as one side of the shuttle may be supported by any suitable means which will hold it in position adapting it to connect with the shaft, and at the same time permit the passage of thread entirely around the shuttle.

In Fig. 8 I have illustrated one means of holding the shuttle in position without the use of a divided shaft. In this figure is shown an upright E , having a suitable indentation e , to allow the free rotation of a projection from the outside of a shuttle. The upright E may be hinged or secured in position by any means which will allow rotary movement of and permit ready removal of the shuttle.

While the shaft is preferably provided with a depression or with depressions and the shuttle with projections, it is to be understood that the shaft may be provided with projections and the shuttle with depressions, or the shaft may have a depression at one part and a projection at the other and the shuttle have a projection at one side and a depression on the other.

It is best to mount the shuttle, on one side at least, in a yielding support, and this will at the same time permit the ready insertion and removal of the shuttle. Any suitable device for the purpose may be employed; but the following specific device of my own will serve as an illustration: In a support F , having a hollow portion, is a spring f , the tension of which is regulated by a follower f' , held in any desired position by a set-screw f^2 . One end of the shaft of the machine bears against the spring, and thus there is a yielding pressure upon it, holding it in yielding contact

with the shuttle. It will be obvious that retraction of the shaft against the spring will enable ready removal of the shuttle.

D represents the needle-bar, to which the needle d is attached in the usual manner, and motion is imparted to the bar through the cam d' , the vertical rod d^2 having a pin or roller entering the groove in the cam, and the arm d^3 .

10 In the operation of the machine, motion being imparted to the power-shaft, the needle is moved down, carrying its thread through and beneath the cloth, and the loop formed as the needle begins to ascend is engaged by the beak b^4 of the shuttle. As the shaft carrying the shuttle revolves, the thread is spread out over the faces of the shell, opening the loop, and this is passed between the shuttle and its supports, engaging and being locked with the thread from the shuttle.

20 The necessary taking up of the needle-thread may be accomplished by any ordinary and suitable take-up device, and as with the employment of the usual take-ups it is highly desirable that the loop should not be very large, in order that the take-up may not have too great motion for speed, I make it possible, by having the shuttle-case, if desired, but little larger than necessary to hold an ordinary spool, to form but a small loop.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a sewing-machine in which a reciprocating eye-pointed needle is employed, a driving-shaft provided with a rounded-oblong or rounded-polygonal engaging end, in combination with a correspondingly-provided case or shuttle mounted loosely against the said end, contiguous to the needle, there being 35 complementary means upon the opposite face of the shuttle to engage and support the same, and driven from the shaft by the described rounded-oblong or rounded-polygonal engaging end thereof, the case or shuttle having a 45 thread-engaging device and a continuous opening, whereby the loop of thread thrown out by the needle will be taken by the thread-engaging device, be spread over the outer surface of the shuttle, and be passed through 50 the juncture thereof with the driving-shaft to be locked by the thread from the shuttle, all substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HARRIET R. TRACY.

Witnesses:

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EWELL A. DICK.